Veterinary Dermatology
Dermatologie vétérinaire

Claw disease in the dog: Does your patient have symmetrical lupoid onychodystrophy (SLO)?

Stephen Waisglass

The presenting complaint of claw disease as the only dermatological manifestation is an uncommon occurrence, accounting for 1.3% of dogs presented to a veterinary teaching hospital (1). Symmetrical lupoid onychodystrophy (SLO) has also been called canine symmetrical onychomadesis and symmetric lupoid onychitis. Regardless of its name, however, when one looks at diseases affecting multiple claws on multiple paws, this disease should be by far at the top of any list of differential diagnoses. It would be quite unusual for an infectious paronychia to present with many claws affecting many paws in an otherwise healthy individual.

Onychodystrophy is defined as abnormal claw formation. Onychomadesis is the sloughing of the claws and onychitis (also known as onychia) is inflammation somewhere in the claw unit (1). Given these definitions, one can see how the various disease names could easily be presentations along the same disease spectrum.

Veterinary Emergency Clinic of Toronto; VCA 404 Veterinary Emergency and Referral Hospital, Toronto, Ontario.

Dr. Waisglass is a Board-certified veterinary dermatologist and a member of the Canadian Academy of Veterinary Dermatology (CAVD).

The CAVD is a not-for-profit organization that promotes veterinary dermatology in Canada and provides continuing education for veterinarians, animal health technicians/technologists, and veterinary students. The CAVD welcomes applications for membership (www.cavd.ca).

Clinical presentation

Symmetrical lupoid onychodystrophy most commonly presents in young to middle-aged dogs. Gordon setters and German shepherd dogs appear to be predisposed, with frequencies varying depending on the location of the study, but it has also been reported in many other breeds including the English setter, akita, bearded collie, boxer, Doberman pinscher, German shorthaired pointer, golden retriever, greyhound, cavalier King Charles spaniel, Labrador retriever, miniature poodle, miniature schnauzer, mixed-breed pointer, Rottweiler, schipperke, silky terrier, Welsh corgi, and West Highland white terrier (1).

Patients with SLO typically present with clinical signs of paw or claw discomfort; the dog may be licking a paw, for example, or the owners may bring the dog to the veterinarian with suspected claw trauma and/or claw avulsion. Should a patient present with a sloughed claw, close inspection of the other claws on all paws is warranted; the trauma may have drawn attention to a more generalized condition. In cases of SLO, multiple claws on multiple paws are affected within a couple of weeks to a few months of the initial onset. Many of the claws exhibit a lifting of the claw plate (Figure 1), sloughing, and associated paronychia. Secondary bacterial infection may occur; the digits may be swollen, and the dog may be lame. Claw regrowth is abnormal (dystrophic) (Figure 2) with most claws being short, brittle, and misshapen (Figure 3).

Figure 1. Onychomadesis. Sloughing of the claw plate (Waisglass).

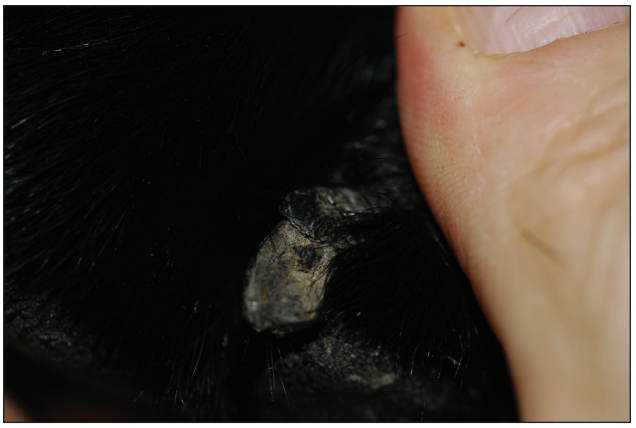

Figure 2. Onychodystrophy (Waisglass).

Pathogenesis

The pathogenesis of SLO in dogs is unknown. Given the breed predispositions, a genetic link would be suspected. DLA class II alleles are associated with genetic risk factors for various autoimmune or immune-mediated diseases. These alleles are associated with risk for the development of SLO in the Gordon setter, supporting the theory that SLO is indeed an autoimmune disease (2).

There may be an association between thyroid disease and SLO. In a retrospective study of 30 dogs and a literature review, Mueller et al (3) reported that 17% of dogs with SLO were diagnosed with hypothyroidism. Antithyroid antibodies in patients with autoimmune thyroiditis may be binding to the claw matrix, with a subsequent lupoid reaction. Many of the thyroid patients in the Mueller et al (3) report, however, were well-controlled with adequate post pill thyroid hormone levels before development of the claw disease. Furthermore, it has been reported that the same DLA haplotype that is associated with SLO in Gordon setters was in fact protective for hypothyroidism; these patients had a reduced risk of hypothyroidism. Thus, any association between SLO and thyroid disease is unclear. Regardless, thyroid evaluation from time to time continues to be recommended in patients diagnosed with SLO.

Adverse food reactions have also been proposed as a possible factor. In the review presented by Mueller et al (3), there was 1 confirmed food allergic dog (and 1 possible additional case). I have personally never diagnosed an adverse reaction in an SLO patient.

Diagnosis

Cytology to assess for bacterial and/or yeast infection is recommended. Bacterial culture may be warranted, as duration of antibiotic treatment may be extensive in cases of deep infection. A hematological and biochemical profile as well as thyroid evaluation serve as a general health assessment and a pre-treatment baseline. Extremely swollen digits should be radiographed to rule out tumor or osteomyelitis.

The diagnosis of SLO can be confirmed histologically. Histopathological confirmation of the disease requires amputation of the 3rd phalanx of an affected digit, as evaluation of the claw plate will be non-diagnostic. The sample is decalcified by the lab and prepared for the pathologist. An affected dewclaw is the best choice, whenever possible. On microscopic evaluation, a hydropic and lichenoid interface dermatitis, a pattern similar to discoid lupus, is seen. There has been some discussion as to whether the histopathological changes are a reaction pattern to an insult in the claw, and not truly diagnostic (1).

Most dermatologists diagnose SLO presumptively based on the clinical signs, physical examination, and history, before considering an amputation. The presentation is typical: an otherwise healthy patient is presented with claw disease alone, affecting multiple claws on multiple paws, usually starting with onychomadesis and progressing to onychodystrophy. Therefore, amputation and histopathology should be reserved for cases in which the typical, gentler immunomodulatory treatments are ineffective, and one needs to rule out other etiologies before starting immunosuppressive therapeutic regimes.

Treatment

In some cases, the nail plate will need to be removed under heavy sedation or anesthesia, to reduce discomfort and/or the risk of the claw getting caught on something in the environment. Other dogs will do well with regular trimming of the distal margin of the avulsing claw.

Fatty acid supplementation is a good start to treatment. It is unclear if the type of fatty acid supplementation is important. Mueller et al (3) concluded that the type of fatty acid was not critical to the treatment outcome. A later study concluded that there was good success in a diet high in omega-3 fatty acids (4). In that study, the effect of fish oil treatment was compared to the effect of cyclosporine treatment in a population of Gordon setters and English setters diagnosed with canine symmetrical onychomadesis. All dogs were fed a high omega-3 fatty acid diet. One group was supplemented with fish oil and the other with cyclosporine. All dogs, except 1 in the cyclosporine group, showed an improvement in the number of normal claws. The fish oil group improved from a mean of 0/18 normal claws to 14/18 and the cyclosporine group improved from a mean of 5/18 to 15/18. However, the number of patients in this study was small and the patients were limited to 2 breeds (6 Gordon

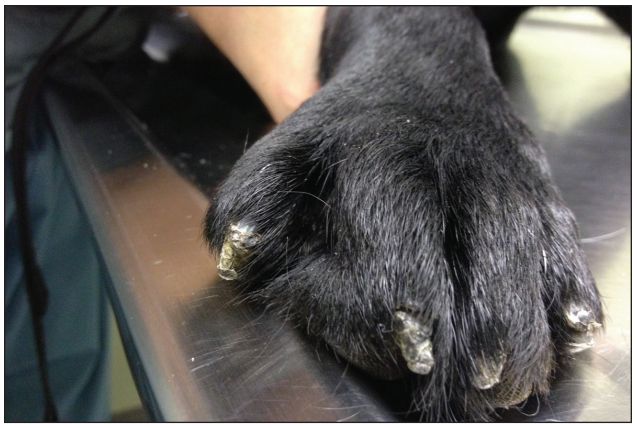

Figure 3. Short, brittle, and misshapen claws (Photo courtesy of Karri Beck DACVD).

Figure 4. Solid but abnormal claws in patient on tetracycline and niacinamide (Waisglass).

setters and 1 English setter). Interestingly, there was no statistical difference in that study between cyclosporine and fatty acid treatments (4).

It takes time to assess response to treatment. In 1 study of a colony of beagles, claw growth varied from 0.7 to 2.1 mm/wk. Growth slows with age, to about 50% of peak value by 15 y of age (1). While a number of SLO patients respond to fatty acid supplementation alone, many cases require concurrent therapies. Given the time it takes to assess response, one should discuss the options of starting with fatty acid treatment monotherapy *versus* the use of fatty acid supplementation as adjunctive therapy, along with tetracycline and niacinamide.

Mueller et al (3) considered tetracycline or doxycycline and niacinamide useful combinations for the treatment of SLO. The combination of tetracycline and niacinamide plus fatty acid supplementation and a high fatty acid diet is the initial treatment of choice at our facility. The client should be reminded that niacinamide is to be administered and not niacin. Tetracycline and niacinamide are both dosed at 500 mg, q8h for patients $>$ 10 kg and 250 mg of each, q8h for patients $<$ 10 kg. The SLO treatment review by Mueller et al (3) did not find a significant difference between tetracycline and doxycycline (administered at 5 to 10 mg/kg body weight once daily). However, an anecdotal report was mentioned in which a patient relapsed when tetracycline was changed to doxycycline. Clinical signs subsided when the patient was placed back on tetracycline and niacinamide. Indeed, I have had a similar experience and choose tetracycline over doxycycline whenever possible.

Each dose reduction should be given time to properly assess response. Rechecks are performed no more frequently than every 6 to 8 wk, as long as the patient is stable. If the patient is doing well, decrease the tetracycline and niacinamide to q12h and recheck in 6 more weeks. If the patient is still doing well, then once daily, and so on. In some cases, the treatment can be stopped without relapse, and in others, there is a relapse once the dose gets too low, requiring an increase to the previous frequency. Close inspection of the base of the claw at each visit will help you to determine if things are going in the right direction. It is important to explain to the owners that the end goal of treatment is claws that are not fragile and painful, but rather strong and comfortable. Claws may grow back visually abnormal distally but otherwise functional and solid (Figure 4).

Pentoxifylline is a useful adjunctive treatment in patients whose response to tetracycline, niacinamide, and fatty acids is incomplete. Doses range from 10 to 20 mg/kg body weight (BW) q8h to 25 to 30 mg/kg q12h (preferred).

It is rare, but in some patients these gentler treatments are ineffective. Under these circumstances, the diagnosis should be reassessed, a biopsy performed and, if the SLO diagnosis remains, treatment with prednisone and azathioprine may be indicated.

In summary, the diagnosis of suspected cases of SLO is direct, simple, and often satisfying. Cytology and bacterial culture should be used to rule out a secondary infection. Radiographs may be needed to rule out osteomyelitis or tumor of individual digits. Fungal culture may be considered to rule out dermatophytosis and thyroid function should be assessed from time to time. A food trial may be performed. Diets high in fatty acids can prove quite helpful. Treatment is safe using some or all of: fatty acid supplementation, tetracycline, and niacinamide with the possible addition of pentoxifylline. On occasion, prednisone and/or azathioprine may be needed, but this form of therapy has been extremely rare in my practice. Gentle treatments, while often lifelong, are generally all that is needed for the control and comfort of patients with SLO.

References

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